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SOURCE

Radio, No 1. 1951, pp 45-47.

BATTERY-POWERED ULTRASHORT-WAVE RECEIVER

Lab, Cent Radio Club of DOSARM

Battery-powered ultrashort-wave receivers and transmitters find extensive application in diverse fields, in contests, for radio-controlled models, etc.

The simple battery-powered ultrashort-wave receiver using miniature tubes described here is a superregenerative receiver with two af amplification stages (see appended diagram). The stages are resistance coupled.

The superregenerative and output stages make use of 2P1P pentodes while a 1K1P pentode (or the pentode section of a 1B1P) is used in the preliminary af amplification stage. One may connect to the receiver output either headphones, a Rekord loudspeaker, or a low-power dynamic speaker with an output transformer. The receiver will operate on any desired antenna, including a piece of wire 1-2 m long.

Within the effective radius of the transmitter of a television center or of an ultrashort-wave FM transmitter, the receiver furnishes loudspeaker reception.

Components

Components

The only homemade parts of the receiver are the coils and the rf choke. The diameter of the coils is 15 mm. For receiving a television center or an FM transmitter, coil L_2 should have seven turns of 1.5-mm-diameter wire. If, however, the receiver is to be used for reception of an amateur ultrashort-wave band, this coil should have five turns of the same type of wire.

Antenna coil L_1 generally has one turn of 1.5-mm-diameter wire and is located 2-4 mm from coil L_2 .

The rf choke Dr is wound with PEL 0.3 wire in one layer on a 0.5-w Type VS resistor having at least 3 megohms resistance. Approximately 40 turns of wire are placed on the resistor.

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50X1-HUM

Capacitor C_2 , 50 μf is a ceramic capacitor, and tuning capacitor C_1 , approximately 5 - 30 μf , is a small air capacitor.

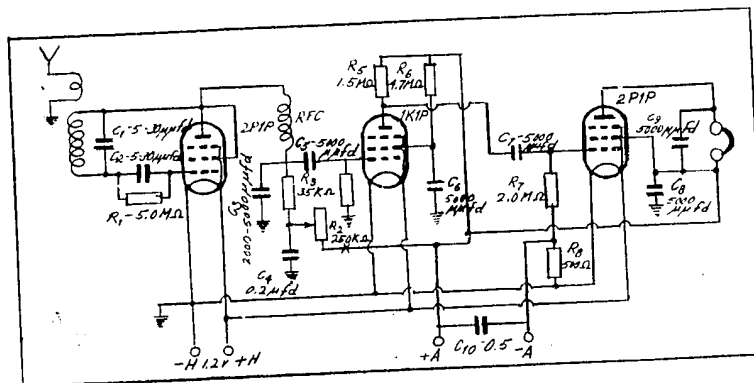
All resistors are type VS, 0.5 w.

Receiver Power Supply

One dry cell is required for supplying the filaments of the tubes, and for the plate current an 80-90 v battery is to be used. The receiver draws 300-ma filament current and 7 to 8 ma plate current. Upon reducing the plate voltage to 40 to 60 v, the receiver will continue to operate, but at reduced volume. A reduction in the voltage of the filament current has more effect on the operation of the receiver. When the filament voltage is dropped below one volt, oscillation will cease.

The receiver has a sensitivity of the order of 4-10 μv . Complete suppression of superregenerative noise is attained with a signal of 25-30 μv .

Schematic Diagram of Receiver



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